

Application No. 10/088025
Amendment dated December 16, 2005
Reply to Office Action of August 18, 2005

Docket No.: 13311-00001-US

AMENDMENTS TO THE CLAIMS

Listing of Claims

1-18 (Cancelled)

19. (New) A method of generating a transformed plant cell, plant tissue, plant or progeny thereof with a modified amino acid content, comprising

(a) transforming a plant cell, plant tissue or plant with an ATP/ADP translocator gene;

(b) optionally regenerating the transformed plant cell or plant tissue from step (a) into a plant; and

(c) further optionally producing transformed plants from the plant produced in step (a) or (b);

wherein a regulatory sequence or a gene copy number of the ATP/ADP translocator gene is modified, and wherein the amount of one or more amino acids in the transformed plant cell, plant tissue or plant or progeny thereof is modified relative to a non-transformed plant cell, plant tissue or plant.

20. (New) The method of claim 19 wherein the transformed plant cell, plant tissue, plant or progeny thereof has an increased transport capacity for ATP into the chloroplastic membrane of said transformed plant cell, plant tissue, plant or progeny thereof.

21. (New) The method of claim 19 wherein the transformed plant cell, plant tissue, plant or progeny thereof produces one or more essential amino acids in modified amounts.

22. (New) The method of claim 19 wherein the transformed plant cell, plant tissue, plant or the progeny thereof produces one or more essential amino acids in increased amounts relative to a non-transformed plant cell, plant tissue or plant.

Application No. 10/088025
Amendment dated December 16, 2005
Reply to Office Action of August 18, 2005

Docket No.: 13311-00001-US

23. (New) The method of claim 19 wherein the transformed plant or progeny thereof is a useful plant.
24. (New) The method of claim 19 wherein the ATP/ADP translocator gene comprises a naturally found, chemically synthesized, modified, or artificially generated nucleotide sequence.
25. (New) The method of claim 19 wherein the ATP/ADP translocator gene comprises the nucleotide sequence of SEQ ID NO: 1.
26. (New) The method of claim 25 wherein the ATP/ADP translocator gene comprises one or more operably linked, regulatory nucleotide sequences.
27. (New) The method of claim 25 wherein the ATP/ADP translocator gene comprises an upstream operably linked promoter.
28. (New) The method of claim 19 wherein the ATP/ADP translocator gene comprises the nucleotide sequence of SEQ ID NO: 2.
29. (New) The method of claim 28 wherein the nucleotide sequence is in antisense orientation.
30. (New) The method of claim 28 wherein said ATP/ADP translocator gene comprises one or more operably linked, regulatory nucleotide sequences.
31. (New) The method of claim 28 wherein said ATP/ADP translocator gene comprises an upstream operably linked promoter.
32. (New) The method of claim 19 wherein said ATP/ADP translocator gene comprises a heterologous nucleotide sequence that encodes an ATP/ADP translocator or an allelic variation or isoform thereof.
33. (New) The method of claim 19 wherein the transformed plant or progeny thereof is potato or maize.

Application No. 10/088025
Amendment dated December 16, 2005
Reply to Office Action of August 18, 2005

Docket No.: 13311-00001-US

34. (New) The method of claim 19, wherein the amino acid(s) is(are) selected from the group consisting of lysine, methionine, threonine, valine, tryptophan, histidine, isoleucine, and leucine, or combinations thereof.
35. (New) A method of generating a transformed plant cell, plant tissue, plant or progeny thereof with a modified amino acid content, comprising
- (a) transforming a plant cell, plant tissue or plant with a gene structure comprising an ATP/ADP translocator gene and a regulatory sequence operably linked to said gene structure;
 - (b) optionally regenerating the transformed plant cell or plant tissue from step (a) into a plant; and
 - (c) further optionally producing transformed plants from the plant produced in step (a) or (b);
- wherein a regulatory sequence or a gene copy number of the ATP/ADP translocator gene is modified, and wherein the amount of one or more amino acids in the transformed plant cell, plant tissue or plant or progeny thereof is modified relative to a non-transformed plant cell, plant tissue or plant.
36. (New) A method of generating a transformed plant cell, plant tissue, plant or progeny thereof with a modified amino acid content, comprising
- (a) transforming a plant cell, plant tissue or plant with a vector comprising an ATP/ADP translocator gene;
 - (b) optionally regenerating the transformed plant cell or plant tissue from step (a) into a plant; and
 - (c) further optionally producing transformed plants from the plant produced in step (a) or (b);

Application No. 10/088025
Amendment dated December 16, 2005
Reply to Office Action of August 18, 2005

Docket No.: 13311-00001-US

wherein a regulatory sequence or a gene copy number of the ATP/ADP translocator gene is modified, and wherein the amount of one or more amino acids in the transformed plant cell, plant tissue or plant or progeny thereof is modified relative to a non-transformed plant cell, plant tissue or plant.

37. (New) The method of claim 36, wherein the vector further comprises one or more regulatory nucleotide sequences.
38. (New) The method of claim 37, wherein the one or more regulatory nucleotide sequences are selected from the group consisting of promoters, terminators, translation enhancers, nucleotide sequences for replication in a suitable host cell, nucleotide sequences for integration into a genome, and combinations thereof.
39. (New) The method of claim 36, wherein the ATP/ADP translocator gene comprises the nucleotide sequence of SEQ ID NO: 1.
40. (New) The method of claim 36, wherein the ATP/ADP translocator gene comprises the nucleotide sequence of SEQ ID NO: 2 in antisense orientation.